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A Follow-up Study of Child Hunger in Canada

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by
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▬

This report is part of a set of research studies on the National Longitudinal Survey of Children and Youth. / Le présent rapport fait partie d'un ensemble d'études sur l'Enquête longitudinale nationale sur les enfants et les jeunes.

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Abstract

This study reports on findings from the National Longitudinal Survey of Children and Youth (NLSCY) for children who experienced hunger in 1996. It also compares these children with those who had been hungry in 1994. Findings on children who were hungry in both years are also presented.

The results reveal that hunger remained a directly measurable experience among a small group of NLSCY children. While the characteristics of hungry families are similar over time, there is a great deal of fluidity among hungry families. Hunger is associated with poor health in the child and in the Person Most Knowledgeable about the Child (PMK), and it is directly related to family dysfunction. A precipitous decline in income (likely associated with job loss) and an additional sibling in the household are important risk factors for a family entering the hunger state.

More specifically, in the 1996 NLSCY cycle, 265 families among 16,433 reported experiencing hunger at some time. While only 1.6% of the NLSCY sample, these families represent about 75,615 Canadian families. This proportion is similar to the adjusted rate of 1.4% seen in the 1994. 37.5% reported being hungry at least every few months.

Hungry families were six times more likely to be lone-parent led than non-hungry families and over eight times more likely to receive social assistance or welfare. Persons of aboriginal descent were four times more likely than other respondents to report hunger. Still, 54% of hungry households received their main income from employment.

Both the PMK and the child were reported to have significantly poorer health than non-hungry PMKs and children. Asthma disproportionately affected children of hungry families. Cigarette use by the PMK was two times higher in hungry households than non-hungry households.

The independent predictors of hunger in 1996 NLSCY families were low household income, lack of two biological parents, more siblings, fair or poor PMK health, and aboriginal ethnic group. The independent predictors of frequent hunger were low household income, more siblings, and mother's education less than high school.

The families reporting hunger were asked to respond to questions on how they coped when they had insufficient food. Overall, 33.2% reported that the parent skipped meals or ate less; 4.9%, that the child skipped meals or ate less; and 21.2%, that the family cut down on variety of food. 31.8% sought help from relatives; 34.7% used food banks, and 28.7%. sought help from friends.

358 families in the NLSCY cohort reported ever being hungry in either 1994 or 1996. Only 81 or 22.6% of hungry families reported persistent hunger, i.e., hunger in both time periods. Of the three groups studied, persistently hungry families had the least change in sociodemographic variables (educational levels, family structure, and employment status). Families moving into a hunger state were more likely to report change in child health status (but not deterioration) and

mothers' employment status, deterioration in PMK health status, significant improvement in fathers' education but worsened full-time work status (lost job), and at least one additional sibling in the household. Families moving out of the hunger state were most likely to improve income adequacy and to report that mother gained full-time work.

The mean annual household income change for those who moved out of hunger was $3,827. For those who moved into hunger, mean annual household income was reduced by $2,690; and for those who persisted in hunger, it increased by $2,966.

Family functioning and child health status were assessed using a continuous scale, with higher scores indicating higher family dysfunction. Families with the highest scores in family dysfunction were those who were persistently hungry. Hunger reported in 1994 or in 1996 was also significantly related to family dysfunction. In 1996, hunger negatively affected health status in boys, and the longitudinal experience of hunger negatively affected girls' health status.

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Résumé

Cette étude fait état des constatations de l'Enquête longitudinale nationale sur les enfants et les jeunes (ELNEJ) au sujet des enfants qui ont connu la faim en 1996. Elle compare aussi ces enfants avec ceux qui ont connu la faim en 1994. De plus, on y présente des renseignements sur les enfants qui ont connu la faim au cours de ces deux années.

Les résultats révèlent que la faim est demeurée une expérience directement mesurable au sein d'un petit groupe d'enfants visé par l'ELNEJ. Même si l'on constate que les caractéristiques des familles qui connaissent la faim sont similaires au fil du temps, il existe beaucoup de fluidité entre ces familles. La faim est reliée à la mauvaise santé de l'enfant et de la personne qui connaît le mieux l'enfant (PCM), et elle est directement associée au dysfonctionnement familial. Une diminution soudaine de revenus (habituellement reliée à une perte d'emploi) et la présence d'une soeur ou d'un frère de plus sont d'importants facteurs de risque pour une famille au seuil de la faim.

Plus particulièrement au cours du cycle de 1996 de l'ELNEJ, 265 familles parmi 16 433 ont avoué avoir connu la faim à un moment ou à un autre. Bien qu'elles ne constituent que 1,6 % de l'échantillon de l'ELNEJ, elles représentent environ 75 615 familles canadiennes. Cette proportion est équivalente au taux ajusté de 1, 4 % de 1994. De ce nombre, 37, 5 % ont indiqué avoir connu la faim au moins tous les quelques mois.

Il est six fois plus probable que les familles qui connaissent la faim soient monoparentales et huit fois plus probable qu'elles reçoivent des prestations d'aide sociale ou de bien-être social. Les personnes de descendance autochtone sont quatre fois plus susceptibles que les autres répondants de déclarer connaître la faim. Néanmoins, 54 % des foyers connaissant la faim recevaient leur revenu principal d'un emploi.

Selon les données, les PCM et les enfants qui ont déclaré connaître la faim n'avaient pas une aussi bonne santé que les PCM et les enfants qui ne la connaissent pas. L'asthme a affecté de façon disproportionnée les enfants des familles qui connaissent la faim. L'utilisation de la cigarette par les PCM était deux fois plus répandue dans les ménages où l'on connaît la faim que dans les autres.

Au nombre des facteurs indépendants reliés à la faim dans les familles visées par l'ELNEJ de 1996, on retrouve un revenu familial peu élevé, l'absence d'un des parents biologiques, le nombre d'enfants, la santé moyenne ou mauvaise de la PCM et l'appartenance à un groupe autochtone. Les prédicteurs indépendants de faim fréquente sont un revenu familial peu élevé, le nombre d'enfants, et le fait que la mère n'ait pas terminé son secondaire.

On a demandé aux familles qui ont déclaré connaître la faim de répondre à des questions concernant leur façon de faire face au manque de nourriture. Dans l'ensemble, 33,2 % ont indiqué que le parent saute un repas ou mange moins; 4,9 %, que l'enfant saute un repas ou mange moins; et 21,2 %, que la famille coupe sur la variété des aliments. De plus, 31,8 % des

familles ont demandé l'aide de parents; 34,7 % ont eu recours à des banques alimentaires et 28,7 % se sont tournés vers des amis.

Parmi les familles de la cohorte visée par l'ELNEJ, 358 ont dit avoir eu faim en 1994 ou en 1996. Seulement 81 d'entre elles ou 22,6 % ont dit avoir connu la faim de façon constante, soit au cours des deux périodes. Des trois groupes étudiés, les familles qui ont connu la faim de façon constante sont celles dont les variables sociodémographiques (niveau de scolarité, structure familiale et situation d'emploi) ont le moins changé. Les familles qui connaissaient de plus en plus la faim sont les plus susceptibles de déclarer : un changement dans l'état de santé de l'enfant (mais non une détérioration) et dans la situation d'emploi de la mère; une détérioration de l'état de santé de la PCM; une amélioration importante du niveau de scolarité du père mais une détérioration de ses conditions de travail à temps plein (perte d'emploi); ainsi que la présence d'au moins un membre additionnel dans la famille. Les familles où l'on avait faim de moins en moins souvent étaient plus susceptibles de déclarer que leur revenu s'était amélioré et que la mère avait obtenu un emploi à temps plein.

La hausse moyenne du revenu annuel des familles qui ne connaissaient plus la faim était de 3 827 $. Par contre, le revenu annuel moyen des familles qui commençaient à connaître la faim avait été réduit de 2 690 $; quant aux familles qui continuaient de connaître la faim, leur revenu avait augmenté par 2 966 $.

On a évalué le fonctionnement de la famille et l'état de santé de l'enfant sur une échelle continue, le pointage élevé indiquant un dysfonctionnement plus sérieux. Les familles avec le plus haut pointage de dysfonctionnement étaient celles qui connaissaient constamment la faim. Le degré de faim déclaré en 1994 ou en 1996 était grandement relié au dysfonctionnement familial. En 1996, la faim a influé de façon négative sur l'état de santé des garçons, et l'expérience à long terme de la faim a eu la même conséquence chez les filles.

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Foreword

The National Longitudinal Survey of Children and Youth (NLSCY) is a unique Canadian survey designed to follow a representative sample of children from birth to early adulthood. It is conducted in partnership by Human Resources Development Canada (HRDC) and Statistics Canada. Statistics Canada is responsible for data collection, while HRDC, the major funder, directs and disseminates research. Data collection began in 1994 and continues at two-year intervals.

The survey for the first time provides a single source of data for the examination of child development in context, including the diverse life paths of normal development. The survey and the research program were developed to support evidence-based policy, using a human development view of the early decades of life. This research paper is part of an ongoing series of papers emanating from a program of research that examines NLSCY data collected in the first two cycles (1994, 1996) of the survey.

1. Introduction

Poverty in Canadian families has grown to unacceptable levels since parliamentarians resolved to eliminate child poverty in 1989. Child poverty affected 21.2% of Canadian children in 1996, an increase from a rate of approximately 19.0% reported in 1994 (Canadian Council on Social Development, 1999). The Canadian Council on Social Development reported that in 1996, 61% of children living with lone female parents, and 52% of all aboriginal children, lived in poverty (CCSD, 1999). Social assistance or welfare benefits have been reduced in many jurisdictions, thereby, deepening poverty for many dependent families (National Council on Welfare, 1997).

Food insecurity, whose extreme expression is hunger, is one possible outcome of the deprivation experienced by families with children who live in severe poverty. Chronically compromised dietary consumption is a well-described outcome of inadequate dietary intake of food insecure individuals (Tarasuk and Beaton, 1999b; Cristofar and Basiotis, 1992). American studies have documented fatigue, irritability, dizziness, frequent headaches, frequent colds and infections, and difficulty concentrating, among children reported to be hungry (Food Research and Action Center, 1995). There remains, however, a limited understanding of the psychological, social, and political implications of coping strategies employed by those living in conditions of food insecurity. The overall health implications of food insecurity are unclear, and the effect of food insecurity on children in particular, has not been well-documented. The relative contribution of long-term food insecurity to health inequities (Evans, Barer and Marmor, 1994) among the poor has not been determined.

The Human Resources Development Canada (HRDC) sponsored study, *A Glimpse of Child Hunger in Canada* revealed that in 1994, 1.2% of National Longitudinal Study of Children and Youth (NLSCY) families (conservatively 57,000 children) reported hunger among their children, and that the data were sufficiently robust to "predict" which families were most likely to report hunger, either frequently or occasionally (McIntyre, Connor and Warren, 1998). The study also identified predictors of food bank use compared with other coping strategies for emergency food provision. The findings revealed an annual household income deficit of $4800 between families reporting frequent versus occasional hunger.

The Food Security Supplement appended to the 1998 National Population Health Survey (Applied Research Branch, 1997) has yet to be released to the public. Food security questions have been included on the ongoing evaluation of Canada's Prenatal Nutrition Program. Today, however, the limited questions on the National Longitudinal Study of Children and Youth remain the only national data on the prevalence of hunger among children in Canada. The longitudinal nature of the NLSCY provides an opportunity to explore the consequences of reported hunger in childhood over both short- and long-term periods. It also permits an evaluation of critical periods in a child's development for such outcomes.

2. Research Questions

The research questions addressed by this study are:

1. What is the prevalence of reported hunger among NLSCY families in 1996 compared with 1994?
2. Is there a difference in the characteristics and coping strategies of families who report hunger in Canada in 1996 compared with 1994?
3. For the 1996 cycle, what are the predictors of hunger and the use of specific coping strategies when NLSCY families confront food insufficiency?
4. Are there socio-demographic characteristics that predict transient versus persistent hunger over a two-year period?
5. What are the health and family outcomes of children in the NLSCY who report hunger in both 1994 and 1996 compared with those never reporting hunger, or those who only report hunger one of those years?

3. Methods and Analysis

3.1 Methods

The National Longitudinal Survey of Children and Youth (NLSCY) is managed jointly by Human Resources Development Canada and Statistics Canada. The data for this study are derived from the first cycle of data collection conducted in 1994 and the follow-up survey conducted in 1996.

For Cycle 1, data were collected from 22,831 respondents in 13,439 households of children newborn to eleven years of age. In Cycle 2, due to economic constraints, the longitudinal sample was reduced to yield a longitudinal sample of 16,875 with 11,190 households. Several sample changes were made between Cycle 1 and Cycle 2, none of which had a material affect on this analysis. The total Cycle 2 sample, including both longitudinal and cross-sectional respondents, totaled 20,025 respondents.

Data collection for Cycle 2 took place from November 1996 to June 1997. In each household and for each survey, the person most knowledgeable (PMK) about the child provided extensive information on behalf of the child and the family about their socio-demographic, health, family functioning, and educational characteristics. In both cycles, the PMK was asked about whether or not the child had a chronic condition or activity limitation. If there was a change reported from Cycle 1, then the PMK was queried in more detail about what the changes were. For the PMKs and their spouses, only new respondents to the survey were asked these questions based on the assumption that chronic long-term conditions and activity limitations would continue over a two-year period.

The hunger questions in Cycles 1 and 2 were unchanged. The NLSCY questions analysed in this study were:

- Has your child ever experienced being hungry because the family had run out of food or money to buy food? If yes, how often?
- How do you cope with feeding your child when this happens? Response choices included the parent or child skipping meals or eating less; reducing food variety; and food procurement strategies such as seeking help from a food bank or other services.

3.2 Analysis

The analysis plan for this phase replicated the cross-sectional analysis conducted for the first cycle. The main difference between the 1994 and 1996 analyses was that only weighted data were used for this study. Both the cross-sectional and longitudinal data were weighted so that unbiased survey estimates could be derived. The response rate for the hunger questions from among the 16515 eligible respondents was 99.5%.

The cleaned 1996 data file was first analysed using descriptive statistics, and cross-tabulations and chi-squares for categorical variables, and the t-test and one-way analysis of variance for continuous variables. The main outcomes of interest were hunger; frequent hunger; and the coping strategies (use of relatives; use of food bank; use of friends; other sources of food such as school food program; parent eats less/skips meals; child eats less/skips meals; and food variety reduced). Determinants included family characteristics (income and sources, family structure, education of parent(s), labour force participation of parent(s), number of children, ethnicity/immigration status); characteristics of the person most knowledgeable about the child (age, general health, activity limitation, smoking, chronic health conditions), and child characteristics (age, gender, general health, chronic conditions). A correlation matrix was also calculated to determine the relationship between various reported coping strategies.

In order to reduce the number of spurious results, $p<.005$ was chosen as the preferred level of significance for comparisons between those experiencing hunger compared with those not experiencing hunger. For the sub-analyses of families who reported experiencing hunger, the significance level remained at $p<.05$. Notwithstanding these significance levels, for all analyses, coefficient of variation release guidelines on the quality of the estimate were used for cell sizes exceeding 30 (Human Resources Development Canada and Statistics Canada, 1998).

Following bivariate analyses, stepwise multiple logistic regression was then conducted using the Statistical Package for the Social Sciences (SPSS) version 7.5 computer program to assess the dependent variables of hunger, hunger frequency, and coping strategies, while controlling for independent socio-demographic, economic, and health status variables.

The longitudinal analyses were conducted using General Linear Models with a repeated measures design. All models included two dependent variables (representing the change in scores between Cycle 1 and Cycle 2), sex of the child as a factor, age of the child as a covariate, all possible interactions between the main effects, and a constant. Pillai's Trace, a multivariate test that resembles the F statistic, was used to determine the significance of each model.

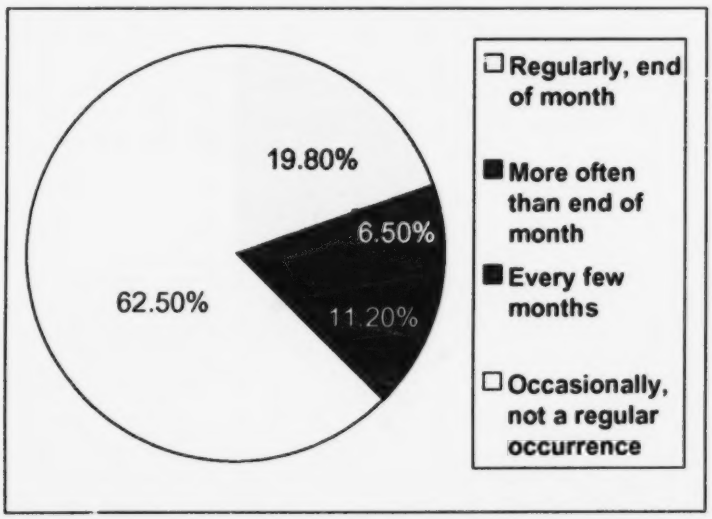
The longitudinal flag was used to identify the 358 persons who reported hunger in either or both cycles. In order to preserve sample size, variables that were asked of all age groups were preferred. In the end longitudinal analyses were conducted on changes in child health, physical activity, and family functioning. We also conducted a longitudinal analysis for body mass index (child's weight in kilograms divided by child's height in meters squared) for children ten years and older.

4. Results

4.1 The Scope of the Problem

A total of 265 families reported ever experiencing hunger among 16433 total families. Although they are only 1.6% of the NLSCY sample, these families conservatively represent about 75,615 Canadian families. This is similar to the adjusted rate of 1.4% seen in the 1994 cohort which represented 53,995 children. In terms of frequency of their family's reported hunger, 37.5% reported frequent hunger, defined as hunger reported at least every few months, similar to the 35.0% observed in 1994 (Figure 1).

Figure 1: **Frequency of Reported Hunger, NLSCY 1996**



4.2 Comparing Hungry Families with Other Families in Canada

The average age of children from hungry households was significantly older than other children, 8.2 [s.d.=3.1] years compared with 7.5 [s.d.=3.4] years (p=.001). There was also a significant difference in the number of siblings in the households reporting hunger [1.8 (s.d.=1.5) children in hungry households versus 1.4 (s.d.=1.0) children in non-hungry households (p<.0005)]. The age of the PMK did not differ significantly between those ever experiencing hunger (35.2 [s.d.=6.0] years) and those who did not.

Table 1 compares socio-demographic characteristics of families who reported hunger in 1996 with those who did not. Hungry families were six times more likely to be lone parent-led than

other families. There was no significant difference in the occurrence of hunger by region. The only ethnic group that was significantly associated with hunger was persons of aboriginal descent (North American Indian, Inuit, Métis) who were four times more likely to report hunger than other respondents. Girl children were also significantly over-represented in hungry households ($p<.005$).

Table 1: **Odds Ratios and Difference in Demographic Variables Between Families Who Report Hunger and Those Who do Not, NLSCY 1996**

Variable	Hunger % (n=265)	No Hunger % (n=16168)	Crude OR (95% CI)
Lone-parent led household	53.2	16.2	5.89 (4.58-7.58)
Two biological parents	36.2	77.1	0.17 (0.13-0.22)
Female child	61.9	48.5	1.72 (1.33-2.23)
Aboriginal descent	12.1M	3.3	3.99 (2.68-5.91)
Mother worked full time all year	27.8 n=248	44.1 n=15825	0.49 (0.37-0.65)
Mother unemployed all year	51.6 n=248	25.9 n=15825	3.06 (2.36-3.96)
Father worked full time all year	50.4 n=139	80.5 n=13604	0.25 (0.17-0.35)
Father had some full time work in past year	36.0 n=139	14.3 n=13604	3.37 (2.41-4.84)
Low or very low income adequacy	51.7	16.4	5.47 (4.25-7.04)
Income source includes wages or salaries	63.4	87.5	0.25 (0.19-0.32)
Income source includes social assistance	49.4	10.3	8.55 (6.64-11.02)
Main income from employment	54.3	88.5	0.15 (0.12-0.20)
Main income from social services	41.9	9.5	6.83 (5.28-8.83)

Note: All differences are significant at $p<.0005$
M = Marginal result according to Statistics Canada estimates (HRDC and Statscan, 1998)

Table 1 also presents differences in employment and income source for hungry and non-hungry households. Just as with 1994 findings, hungry families were over five times more likely to represent the lowest or lower middle income adequacy levels, and over eight times more likely to receive income from social assistance or welfare than non-hungry families. Still, 54% of hungry households received their main income from employment, and 63% received employment income

over the year. There was no significant difference between income source among hungry families between 1994 and 1996.

The child tax benefit was a source of income for 80.8% of hungry families compared with 62.6% of other families ($p<.0005$). Given the number of lone parent-led households, we examined income from child support: 37.1% of lone-parent led households experiencing hunger reported income from child support in 1996. This was not significantly different from the 36.0% of other eligible households that received income from child support in that year.

The NLSCY also asked about earned income. The mean annual personal income of the PMK in 1996 was $4455 lower ($p<.001$) for those who reported that their child experienced hunger ($15,574) than for those who reported that their child never experienced hunger ($20,029). The difference in mean household income between the two groups was $27,456 ($26,909 v. $54,365) ($p<.0005$). The 1994 income differences were $4835 and $29,469 for mean personal and household incomes, respectively. The non-comparability of households over the two cycles precludes further financial analyses.

The PMK's main reported activity in 1996 reflected income sources: similar to 1994 results, 53.6% of respondents reported caring for the family while 30.2% reported caring for the family and working. These activities were significantly different from other families where the percentages were 41.3% and 45.1% respectively ($p<.0005$).

Table 2 presents educational level of attainment for hungry and other mothers, and for hungry and other fathers. Educational levels were significantly lower for hungry parents. There was no significant difference in educational attainment between male or female hungry parents.

Table 2: **Educational Attainment of Mothers and Fathers by Occurrence of Reported Hunger, NLSCY 1996**

Education	Hungry Mothers* (%) *n=248*	Other Mothers (%) *n=15901*	Hungry Fathers* (%) *n=137*	Other Fathers (%) *n=13582*
Less than high school	25.8	12.0	27.7	13.4
High school completion	14.9	19.6	22.6	17.6
Some post-secondary	37.5	28.1	22.6	23.5
Degree	21.8	40.3	27.0	45.5

*p<.0005

4.3 Health Status

PMKs were asked to rate their health from excellent to poor. PMKs of hungry families reported significantly poorer health than other PMKs (p<.0005). Whereas 74.0% of other PMKs were reported to have very good or excellent health, 46.4% of PMKs from hungry families were reported to have this health status (p<.0005) [Table 3]. PMKs from hungry households were also significantly more likely to report activity limitations (p<.0005) and the presence of a chronic condition (p<.001). Migraine headache was reported significantly more often in hungry compared with other PMKs (24.2% v. 9.2%; p<.0005), as were chronic back problems (17.4% v. 9.7%; p<.0005).

Table 3: **Reported Health Status of PMK and Child by Occurrence of Hunger, NLSCY 1996**

	PMK		Child	
Health Rating	Hunger (%) * *n=263*	No Hunger (%) *n=16067*	Hunger (%) * *n=265*	No Hunger (%) *n=16145*
Excellent	18.6	37.3	37.2	59.8
Very Good	27.8	36.7	33.1	28.3
Good	28.9	20.5	20.7	10.3
Fair/Poor	24.7M	5.5	9.0U	1.6

Note: * p<.0005
M = marginal estimate
U = unreliable estimate

Children of hungry families were reported to have significantly poorer health than other children (p<.0005) [Table 3]. Whereas 88.1% of other children were reported to have very good or excellent health, 70.3% of children from hungry families were reported to enjoy this health status. Ever having had asthma was the only health condition that differed between children of hungry and other families. While 13.5% of non-hungry children were ever diagnosed with asthma; the risk was 2.6 (95% CI 1.95-3.41) times higher at 28.8% for hungry children (p<.0005). Inhalant use by the asthmatic hungry child was 1.6 times higher, with 73.7% of hungry asthmatic children reporting regular Ventolin use compared with Ventolin use in 46.2% of other asthmatic children (p<.0005).

Cigarette use by the PMK in the households of hungry families was two times higher than in non-hungry households: 58.3% of PMKs from hungry households reported smoking compared with a smoking rate of 29.0% in other PMKs (p<.0005).

Stepwise multiple logistic regression was conducted to predict the risk of hunger in 1996 NLSCY families. The independent predictors of hunger were low household income; lack of two biological parents; higher number of siblings; PMK's health is fair or poor; and ethnic group is aboriginal [Table 4].

Table 4: **Logistic Regression Analysis of Risk Factors for Hunger, NLSCY 1996**

Independent Variable	Adjusted Odds Ratio	95% C.I.	p-value
Two biological parents	0.36	0.26 - 0.48	0.0005
Household income	0.97	0.96 - 0.97	0.0005
PMK's health is fair/poor	4.42	2.97 - 6.57	0.0005
Total number of siblings	1.43	1.31 - 1.56	0.0005
Ethnic origin (aboriginal)	1.58	1.03 - 2.43	0.04

4.4 A Profile of Frequently Hungry Families

Significant differences were found between the 100 families that reported frequent hunger (i.e., hunger at least every few months) and the 165 families that reported occasional hunger. These differences centred on household composition; characteristics of the parents; and income. In terms of family composition, frequently hungry families were significantly more likely to have an increased number of siblings in the household ($p<.007$); to have a higher total number of persons in the household ($p<.01$); and were more likely to have the PMK's spouse living in the home ($p<.007$). Among parental characteristics, frequently hungry families were more likely to report that the PMK's main activity was caring for the family ($p<.0005$); that both the mother and the father had been unemployed year round (both $p<.0005$); and to have both a mother ($p<.0005$) and a father ($p<.017$) whose level of education was significantly lower than found in occasionally hungry households. Frequently hungry families were also more likely to report that their main income source was social services or welfare ($p<.0005$). The mean annual household income of frequently hungry families was $20,435 which was significantly lower by $10,360 than the $30,795 mean annual household income reported by occasionally hungry families ($p<.0005$). Mean annual personal income for frequently hungry PMKs was $11,817, an income gap of $6011 compared to the mean annual personal income of PMKs of $17,829 reported by occasionally hungry households ($p<.0005$). Interestingly, the PMKs mean annual personal income gap was higher between occasionally and frequently hungry families than between ever hungry and never hungry families.

Stepwise multiple logistic regression analysis showed that the independent predictors of frequent hunger were low household income, higher total number of siblings in the household, and mother's education is less than high school [Table 5].

Table 5: **Logistic Regression Analysis of Risk Factors for Frequent Hunger, NLSCY 1996**

Independent Variable	Adjusted Odds Ratio	95% C.I.	p-value
Household income	0.95	0.93 - 0.98	0.0005
Mother's education less than high school	4.47	2.27 - 8.80	0.0001
Total number of siblings	1.32	1.08 - 1.62	0.006

4.5 Responses to Lack of Food and Coping Strategies

The 265 families reporting hunger were asked to respond to questions on how they coped when they had insufficient food: 33.2% reported that the parent skipped meals or ate less when the family had run out of food or money to buy food; 4.9%U [Statistics Canada warns that this result is unreliable] reported that the child skipped meals or ate less; and 21.2% reported that they cut down on the variety of food that the family usually ate. There were no independent predictors of a parent skipping meals or eating less.

Use of any of a number of coping strategies for the securing of additional food when the family had run out of food or money to buy food was also solicited: 60.8% of families used one coping strategy; 21.9% used two strategies; and 17.0% of families used three or more strategies. Seeking help from relatives was reported by 31.8% of those reporting hunger; food bank use was reported by 34.7%; seeking help from friends was utilized by 28.7%; and seeking help from a social worker/government office, or from a meal program, were both identified too infrequently to report. Seeking help from a food bank was significantly more likely among those reporting frequent hunger ($p<.0005$). A significant correlation ($p<.01$) was found between seeking help from friends and seeking help from relatives.

In terms of bivariate analysis, food bank use among those reporting hunger was significantly more common among households where there were not two biological parents ($p<.005$); where the child lived with a single female parent ($p<.0005$), or single parent ($p<.0005$); residents of Ontario ($p<.003$); among those who used more than one coping strategy ($p<.0005$). In fact, 43.5% of food bank users used three or more coping strategies; where income included the child

tax benefit (94.6% compared with 73.4% of non-food bank users who reported hunger, p<.0005); among those who received income from social assistance or welfare (66.3% versus 40.1%, p<.0005); and among those who reported social services as the main income source (57.6% versus 33.1%, p<.0005).

The independent predictors of food bank use were: does not live with two biological parents; higher total number of siblings in household; and receives income from social assistance or welfare [Table 6]. No predictors were identified for the other coping strategies.

Table 6: **Logistic Regression Analysis of Risk Factor for Food Bank Use, NLSCY 1996**

Independent Variable	Adjusted Odds Ratio	95% C.I.	p-value
Total number of siblings	1.52	1.17 - 1.97	0.002
Income includes social assistance/ welfare (1=yes; 2=no)	0.32	0.15 - 0.68	0.003
Two biological parents	0.39	0.17 - 0.88	0.02

4.6 Examining Persistently and Transiently Hungry Families

There were 358 families in the NLSCY cohort in both 1994 and 1996 who ever reported hunger. Only 81 or 22.6% of them reported persistent hunger, i.e., hunger in both time periods. In order to determine factors related to persistent rather than transient hunger, we compared families who reported hunger in 1994 but not in 1996 (31.3%) or hunger in 1996 but not 1994 (46.1%), with families who reported hunger in both 1994 and 1996. Modifiable socio-demographic variables that were examined included change in educational attainment and employment status of mother and/or father, change in personal and household income, change in number of persons in household, and health status change in the PMK or child.

Table 7 presents socio-demographic and health variables associated with transient or persistent hunger for the years 1994 and 1996. Persistently hungry families had the least change in socio-demographic variables, i.e., the most stable educational levels, family structure, and employment/unemployment status of all three groups. Families moving into the hunger state were more likely to report change in child health status (but not deterioration), PMK health status deterioration, significant improvement in father's education, mother's unemployment status change, at least one additional sibling in the household, and father full time work status change (loss of work).

Table 7: **Socio-demographic and Health Variables Associated with Either Transient or Persistent Hunger in 1994 and 1996, NLSCY 1994 and 1996**

Variable	Hunger 1994, not 1996 (%)	Hunger 1996, not 1994 (%)	Hunger 1994 and 1996 (%)	p-value (chi-square, 2 df)	Crude OR (95% CI) and p-value for hunger 1996 not 1994 vs other states
Child health status change	41 (n=112)	98* (n=166)	34 (n=80)	0.0006	2.25 (2.09-5.70) p=.0002
Child health status worse	19 (n=112)	47 (n=166)	20 (n=80)	NS	--
PMK health status change	81 (n=112)	88* (n=166)	48 (n=82)	0.005	--
PMK health status worse	23 (n=112)	73* (n=166)	13 (n=82)	0.0001	3.45 (1.27-8.52) p<.0001
Education: Mother improved	16 (n=107)	39 (n=159)	2* (n=68)	0.0003	--
Education: Father improved	8 (n=38)	26* (n=87)	0 (n=31)	0.002	3.25 (1.27-8.52) p=.01
Father: unemployment status change	5 (n=38)	8 (n=88)	1 (n=31)	NS	--
Mother: unemployment status change	32 (n=107)	73* (n=160)	11* (n=68)	0.0001	2.57 (1.58-4.21) p<.0001
At least one more sibling in household	4 (n=111)	26* (n=167)	2 (n=82)	0.0002	5.75 (2.18-16.03) p<.0001
Change in number of parents in household	12 (n=109)	26* (n=167)	4 (n=82)	0.04	2.06 (1.02-4.21) p=.04
Income adequacy lowest level or lower	9* (n=110)	32 (n=165)	16 (n=81)	0.03	--
Father full time work status change	19 (n=37)	51* (n=89)	3* (n=31)	0.0001	2.81 (1.38-5.74) p=.003
Father lost full time work	2 n=37)	13+ (n=89)	0 (n=31)	0.04	5.64 (1.15-26.57) p=0.03
Father gained full time work	17 (n=37)	38 (n=89)	3 (n=31)	0.002	--
Mother full time work status change	33 (n=106)	39 (n=160)	16 (n=68)	NS	--
Mother lost full time work	16 (n=106)	30 (n=160)	9 (n=68)	NS	--
Mother gained full time work	17++ (n=106)	9 (n=160)	7 (n=68)	0.02	--

Note: * Indicates significant (p<.005) difference between marked variable compared with other two variables combined.

\+ p = 0.03 this variable compared with other two hunger state variables combined.

++ p = 0.02 this variable compared with other two hunger state variables combined.

Families moving out of the hunger state were most likely to experience an improvement in income adequacy (OR 2.70 [95% CI 1.22-6.25, p<.01], and mother gaining full time work (OR 2.5 [95% CI 1.15-5.55, p<.02]. The mean annual household income change for those who moved out of hunger was $3827; while for those who moved into hunger, it was -$2690; and for those who persisted in hunger, mean household income change was $2966 (F=3.3, p=0.038). Mean annual personal income was not significantly related to change in hunger status.

4.7 Longitudinal Results

Family functioning, physical activity, child health status, and body mass index (BMI) in children 10 years and older were assessed longitudinally. Physical activity changes differed by gender over time. They did not vary in relation to hunger status, and are thus not reported here.

Table 8: **Analysis of Family Function Scores in 1996 Related to Hunger in 1994 and in 1996, NLSCY 1994 and 1996**

General Linear Model Multivariate Tests

Effect	df	F	p
Age	1	1.527	0.217
Hunger T1	1	17.872	0.0005
Hunger T2	1	24.630	0.0005
Gender	1	5.777	0.016
Hunger T1*T2	1	4.444	0.035
Hunger T1*Gender	1	2.823	0.093
Hunger T2*Gender	1	0.202	0.653

Family Functioning Scores (higher score = higher dysfunction)

	Hunger T1 (s.d.)	Hunger T2 (s.d.)	Hunger T1 & T2 (s.d.)	Hunger Never (s.d.)
Both sexes	10.14 (5.21)	10.93 (5.72)	11.53 (4.98)	8.02 (5.00)
Girls	11.02 (5.26) n=47	11.70 (6.42) n=96	13.21 (3.96) n=56	8.09 (5.04) n=6656
Boys	9.36 (5.08) n=53	9.80 (4.27) n=65	8.04 (5.13) n=27	7.96 (4.95) n=7122

Family functioning was measured using a continuous scale with higher scores indicating higher family dysfunction. This scale is aimed at providing a global assessment of family functioning and the quality of relationships in the family, particularly between parents or partners, rather than

between parents and their children. Children were grouped as having persistent hunger, hunger in 1994 (Time 1) only, or hunger in 1996 (Time 2) only [Table 8]. Scores were highest for families with girl children. Families reporting children with the highest scores in family dysfunction were those who were persistently hungry. Reported hunger at Time 1 or Time 2 was significantly related to family dysfunction (both, $p<.0005$). As well, there was an interaction between the two variables meaning that the longitudinal experience of hunger is directly related to family dysfunction.

The PMK's rating of child health was next examined. Excellent child health was given a score of 1, with poor health scored 5. Child health was found to be negatively affected by hunger that co-existed at Time 2 for boys, as well as by a longitudinal experience of hunger for girls. Gender had an independent effect on child health.

Table 9: **Analysis of Child Health Status in 1996 Related to Hunger in 1994 and in 1996, NLSCY 1994 and 1996**

General Linear Model Multivariate Tests

Effect	df	F	p
Age	1	8.260	0.004
Hunger T1	1	0.480	0.489
Hunger T2	1	62.265	0.0005
Hunger T1*T2	1	9.473	0.002
Gender	1	2.625	0.105
Hunger T1*Gende	1	22.315	0.0005
Hunger T2*Gender	1	0.354	0.552
Hunger T1*T2*Gender	1	10.898	0.001

Child Health Status Scores (1=excellent, 5=poor)

	Hunger T1 (s.d.)	Hunger T2 (s.d.)	Hunger T1 & T2 (s.d.)	Hunger Never (s.d.)
Both sexes				
	1.70 (0.97)	2.05 (1.06)	2.12 (0.98)	1.53 (0.75)
Girls				
	1.88 (1.19) n=50	1.82 (0.78) n=96	2.38 (1.00) n=56	1.54 (0.75) n=6933
Boys				
	1.56 (0.72) n=61	2.38 (1.31) n=66	1.59 (0.69) n=27	1.53 (0.74) n=7353

Children's BMIs were calculated for children 10 years and older. BMI adjusts weight for height for an overall assessment of obesity, normal weight, or underweight status. While the sample size

was very small, BMI was related to persistent hunger for both boys and girls, but their experience differed. Persistent hunger in girls led to the highest weights and in boys, it led to the lowest weights.

Table 10: **Analysis of Body Mass Index for Children 10 Years and Older in 1996 Related to Hunger in 1994 and in 1996, NLSCY 1994 and 1996**

General Linear Model Multivariate Tests

Effect	df	F	p
Age	1	166.297	0.0005
Hunger T1	1	0.105	0.746
Hunger T2	1	10.256	0.001
Gender	1	7.614	0.006
Hunger T1*T2	1	15.009	0.0005

BMI (lower scores tend to underweight; higher scores to overweight)

	Hunger T1 (s.d.)	Hunger T2 (s.d.)	Hunger T1 & T2 (s.d.)	Hunger Never (s.d.)
Girls >10 years				
	20.96 (2.94) n=16	20.53 (4.90) n=17	21.48 (3.58) n=22	19.14 (3.74) n=2051
Boys >10 year				
	20.36 (3.46) n=16	19.11 (1.23) n=7	16.55 (2.25) n=10	19.49 (3.70) n=2102

5. Discussion

"The era of globalization is upon us " (Anderson and Cavanagh, 2000). Globalization has supplanted the old ways of Fordist capitalism and its post-WWII emphasis on Amass production for mass consumption" (Cox, 1987). In this new era of intensive global economic restructuring, corporations have trimmed their workforces, sub-contracted substantial proportions of their production, and re-settled in the more than 200 export processing zones around the globe (Bernard, 1994).

The era of globalization has demanded a new public policy framework throughout the world. At its core, this policy framework for globalization-- typically called the neo-liberal policy agenda or the Washington consensus--emphasizes the principle of free markets, including liberal trading regimes, and undistorted labour markets. In accordance with the principle of free markets, states have privatized public operations, removed barriers to trade, lowered corporate taxes and other investment hindrances, and, most importantly, reduced income supports (such as social programs and wage legislation) that are seen by some to distort labour markets (Greider, 1997).

In keeping with the demands of globalization, the neo-liberal public policy framework is taking shape in Canada. The Canadian state is no longer content with the Keynesian policy framework -- counter-cyclical spending, significant state involvement in the economy, and generous social transfers -- that served governments in the past. The centerpiece of the neo-liberal agenda in Canada is the North American Free Trade Agreement. Successive federal and provincial governments have also cut back on social program spending, especially welfare services and Employment Insurance, reduced corporate taxes, implemented the Goods and Services Tax (GST) and Harmonized Sales Tax (HST), aggressively promoted entrepreneurialism, attacked unions and labour legislation, privatised state-owned enterprises and, lastly, re-structured and downsized government (Laxer, 1998). These policies have had the cumulative effect of driving down the social wage in Canada, thereby lowering production costs for transnational corporations (Campbell, Gutierrez Haces, Jackson, Larudee and Sanger, 1999).

The corporate hubris regarding globalization sits awkwardly against the culture of austerity felt by so many Canadians. Despite optimism about global growth having a net positive impact on Canada, we have seen the expansion of poverty throughout the country, falling real wages and a

growing gap in incomes between the wealthiest and the poorest segments of Canadians (Yalnizyan, 2000).

Within this generic policy context then, let us examine the results of this study and its implications for Canadian social and health policy.

5.1 Child Hunger in Canada

According to the families of the NLSCY, the extent of the problem of children experiencing hunger is little changed between 1994 and 1996. While both the percentage and number of families reporting hunger increased, the increases failed to reach statistical significance. The prevalence rate of 1.6% of NLSCY families reporting hunger is about 25% of population-adjusted rates found in the United States, which is the only available comparator. The Third National Health and Nutrition Examination Survey (NHANES III) in the United States, conducted between 1988 and 1994, attempted to measure food insufficiency for the first time among its nationally representative sample population (Alaimo, Briefel, Frongillo and Olson, 1998). The question asked of respondents was whether or not they "sometimes" or "often" did not get enough to eat. Results revealed that 6.8% of families with children 2 months to 5 years, and 5.7% of families with children 6-11 years, lived in families that reported sometimes or often not getting enough food to eat. In 2.7% of the families surveyed, children younger than age 17 had cut the size or skipped meals in the previous month because of a lack of food.

The Community Childhood Hunger Identification Project (CCHIP) categorized families with children as hungry based on positive parental responses to five of eight standardized questions on the experience of food insufficiency. Data from nine U.S. states revealed that 8% of children under the age of 12 experienced hunger (Wehler, Scott, and Anderson, 1996.) There is only a sparse literature on food insecurity in the United Kingdom, New Zealand, or Australia (Dobson, Beardsworth, Keil, and Walker, 1994; Dowler and Calvert, 1995; Wilson, 1997; Lang, 1999; Uttley, 1997), and very little is published on this topic in the European Union. So while the Canadian rate is better than that seen in the United States, it is plausible that the Canadian rate is still well above European rates given that Canadian poverty lines are typically much closer to U.S. levels than continental levels (United Nations Development Program, 1999).

Public perception of child hunger in Canada is actually much greater than the NLSCY statistics show. The "National Child Hunger Survey" (Thompson Lightstone and Co. Ltd, 1997), commissioned by the Canadian Living Foundation and conducted by a consulting firm in 1997 surveyed 2000 randomly chosen adults. It found that respondents believed that 42.2% of Canadian schoolchildren were not eating an adequate breakfast. When asked to rank child hunger in terms of importance compared with other national issues such as quality education, national unity, quality health care, and unemployment/job creation, between 85% and 89% of respondents stated that they believed that child hunger was at least as important as these other issues.

Canadian's uncontested belief that child poverty equals child hunger, as demonstrated by the National Hunger Survey, encourages an exaggerated view of the occurrence of child hunger in Canada. In the NLSCY, 24.6% of children aged 0 to 11 lived in poverty, defined as families living below Statistics Canada's low income cut-off (Ross, Scott and Kelly, 1996). In 1996, less than one- fifteenth of these families reported that their child experienced hunger because there was no food in the house or money to buy food. Although the incidence of hunger in children is disturbing and in need of public solutions, this study and others (Rose, 1999) demonstrate that it is not necessarily a consequence of poverty.

Rose emphasizes the importance of using direct measures of food security because indirect measures of well-being such as poverty-level incomes are neither specific nor sensitive to the hunger condition (Rose, 1999). The NLSCY uses a direct parental report of hunger. In terms of the actual question used in the NLSCY cycles, the question "Has your child EVER gone hungry" was interpreted as changeable and in fact was sensitive to at least a biennial change in hunger status.

Is a self-report of hunger valid? The answer appears to be "yes". Rose and Oliveria (1997) reported that in the United States, at least for adults, self-reported hunger measures are valid surrogate measures for low intakes of required nutrients. Their study adds further credibility to national surveys using self-report measures of hunger in the United States such as the Community Childhood Hunger Identification Project and the Food Security/Hunger Module of the 1995 Current Population Survey, whose questions are similar to the NLSCY (Sidel, 1997).

5.2 Who Becomes Hungry?

Campbell's conceptualization of food insecurity states that food insecurity results from anything that "limits either the household resources (money, time, information, health, etc.) or the proportion of those resources available for food acquisition. Hence risk factors include factors that limit employment opportunities, wage and benefit scales and social assistance benefits, or that increase non-discretionary non-food expenditures such as the cost of housing and utilities, health care, taxes, child care and the likelihood of emergencies" (Campbell, 1991). Among the families of the NLSCY, the independent predictors of hunger were lone parent-led and aboriginal households, low household income, higher number of siblings, and PMK reports poor or fair health. These findings are not surprising given the 61% poverty rate seen in lone-mother led households, and the fact that overall, 52% of aboriginal households are classified as poor (CCSD, 1999).

Frequent hunger was predicted by low household income, a higher number of siblings, and low maternal education. In Tarsuk and Beaton's (1999a) study of food bank recipients, the only socio-demographic variable associated with severity of food insecurity was higher number of children in the household. The observation of higher number of siblings predicting both frequent and any hunger may be related to the burden of literally 'another mouth to feed'. The main income feature of frequently hungry households was a very low annual mean personal income of the PMK which was in fact significantly lower than the already low annual mean personal income of the PMK in occasionally hungry families.

Income is clearly one of the most important determinants of food insecurity and hunger. For example, the 1995 U.S. Current Population Survey (CPS) showed that 17% of households with incomes less than 50% of the poverty level were hungry, whereas only 1.4% of those 185% or greater above the poverty line were so affected. Rising incomes have also been linked directly to declines in food insufficiency between 1988 and 1994 (Rose, 1999).

The clear connection between income and food insecurity and hunger raises concern about falling real wages in Canadian society, and especially about the stagnation and decline in the real minimum wage rate in all of the provinces. Between 1976 and 1995, for example, the minimum wage rate fell by more than 25% in eight of the country's ten provinces (Schellenberg and Ross,

1997, p 42). In our study, 63% of hungry households received employment income over the year, and this was the main source of income for 54% of hungry households. The universal decline in the minimum wage rate is one of the key contributing factors to the expansion of the working poor. The growth of the working poor, quite simply, is likely to exacerbate food insecurity and hunger.

The situation was equally bleak for recipients of social assistance or welfare; 41.9% of families who reported hunger in 1996 received social assistance or welfare as their main source of income; and among the frequently hungry, social assistance was the main source of income in 61.0% of the cases (data not shown). The National Anti-Poverty Organization report entitled, "Poverty and the Canadian Welfare State: A report card" (NAPO, 1998), outlines the erosion of the Canadian welfare state between 1990 and 1996 including the tightening of eligibility requirements for social assistance and/or cuts in benefits. These years saw the highest level of income inequality in Canada in twenty years with the poorest 20% seeing their average incomes fall by $500 as a result of decreased government transfer payments and lower real labour market earnings. The creation of the Canada Health and Social Transfer in 1996, a move that reduced federal government transfers to the provinces and territories for health, education and social services, has likely aggravated these effects by making "it all but impossible for provinces and territories to make long-overdue improvement in the welfare systems." (National Council of Welfare, 1999-2000, p. 67). The conclusion as of 1996 was that real suffering and increased hardship had occurred for low income Canadians as a result of continued erosion of social assistance rates.

Welfare rates do recognize the presence of children within households, although the overall rates are insufficient and fall well below the poverty line. In contrast, wages in Canada do not recognize family size and the number of children. The insensitivity of wages to family type--put bluntly as the number of mouths to feed-- contributes to low income levels in many families and by implication, as this study confirms, is bound to contribute to food insufficiency.

With the second cycle of the NLSCY, we were able to track hungry families over time as experiencing hunger in 1994 but not in 1996 (moving out of the hunger state), experiencing hunger in 1996 but not in 1994 (moving into the hunger state), or experiencing hunger in both

1994 and 1996 (persistent hunger state). Only 22.4% of families reported persistent hunger. Persistently hungry families had the least change in socio-demographic variables, i.e., the most stable educational levels, family structure, and employment/unemployment status, of all three groups. Families that moved out of the hunger state reported significant increases in income adequacy, and a mother who gained full time work compared to the other two groups.

The risk of moving into the hunger state was 5.75 times higher for families when at least one additional sibling was added to the household, and 5.64 times higher for families where the father lost full time work, than for families that moved out of the hunger state or who remained persistently hungry. Other risks for moving into the hunger state included adding another parent to the household, father's improved educational status (perhaps a result of returning to school after job loss), and mother's unemployment status change. A precipitous decline in mean annual household income (-$2690) also occurred in families that moved into the hunger state.

The fluidity of hungry families is consistent with recent policy trends in Canadian society that have created dislocations in work, and have increased restrictions on access to social assistance and Employment Insurance, making it harder for families to "get by" at times of difficulty or when the family is stressed with a new addition to the household. Our finding regarding the relationship between hunger and precipitous income decline is alarming given the direction of public policy and economic trends over the last two decades, directions likely to encourage sharp losses in income. It is significant that seasonal employment and the tendency towards a casualized labour force--part-time and temporary employment-- continue throughout Canada, especially in the Maritimes. Studies have shown that seasonal and temporary workers are susceptible to sharp declines in income over the course of the year (L'Italien, LeBreton and Grignon, 1999). More generally, the decline of the "good job" characterized by long-term, stable employment, and the highly touted transition to the so-called "flexible worker" is likely to encourage a sudden loss in income over the course of adult life (Rifkin, 1995).

5.3 Hunger and Health

Both in 1994 and in 1996, health status of the both the PMK and the child were significantly related to hunger as were activity limitations, and the presence of a chronic condition. Migraine headache, a condition that can be exacerbated by stress, and chronic back problems, were

significantly higher in hungry compared with other PMKs. A deterioration of the health of the PMK was 3.5 times more likely among those who moved into the hunger state than among those who either persisted in, or moved out of, the hunger state.

The causal relationship between food insufficiency and ill-health of parents in hungry households is unclear. Cristofar and Basiotis (1992) found that lower levels of intake were associated with reported food insufficiency among women and that food insufficiency of women in relation to other members of the household was related to larger household size, mothers who reported poor health, and women who were smokers.

Hunger does seem to impact child health. Child health status was found to be negatively affected by hunger, an effect that was mediated by gender. For boys, poorer health status occurred at the time of hunger; for girls, the longitudinal experience of hunger over two time periods, had a significant negative impact on their health. The literature documents that nutritionally disadvantaged children have more health problems such as anemia, weight loss, frequent colds, and infections than nutritionally advantaged children (Maxwell and Simkins, 1985; Shah, Kahan, and Krauser, 1987; Miller and Korenman, 1994). Overall nutritional intake is also inadequate and specific deficiencies are more likely in the face of inadequate dietary intake (Rose and Oliveira, 1997). Insufficient food is associated with impaired growth and mental development (Brown and Pollitt, 1996).

Asthma is becoming recognized as a condition related to low socioeconomic status (Wissow, Gittelsohn, Szklo, Starfield, and Mussman, 1988; Weitzman, Fortmaker, Walker, and Sobol, 1989;). Children of hungry families were affected not only by higher rates of asthma but higher severity, or poorer control of asthma, as indicated by disproportionately higher reported Ventolin use among hungry asthmatic children compared with non-hungry asthmatic children.

Cigarette use in the households of hungry families is partially responsible for higher child asthma rates (Chen, Rennie and Dosman, 1996), but also represents nicotine addiction among their mothers who are likely stressed, and possibly hungry (Stewart, Brosky, Gillis, Jackson, Johnston, Kirkland, et al, 1996). Smoking produces harmful effects to health and extra cost in financially stressed households (Mummery and Hagen, 1996). The 1996/1997 National Population Health Survey reported on the smoking behaviour of Canadians and found that 26% of women over the

age of 15 were smokers (NPHS Highlights, 1999). At a smoking rate of 58%, hungry mothers are clearly smoking well above societal norms.

Behaviour and school performance could not be assessed for children reporting hunger because there were no questions on these domains asked of the entire cohort. Nutritionally disadvantaged children have been shown to have higher school absences, and impaired learning compared with other children (Wehler, Scott, and Anderson, 1992; Skolnick, 1995). Psychosocial functioning, manifested by behavioural and attention problems in school, has been shown to be impaired in children of low income families experiencing hunger (Murphy, Wehler, Fagan, et al., 1998). The Community Childhood Hunger Identification Project studies revealed that children who were classified as hungry were more likely to have mood and attention problems and more likely to be absent from school than poor children who were classified as not hungry (Wehler et al, 1996). Healthy growth and development in general are impaired in the face of food insufficiency, and children are less likely to succeed as healthy citizens over the long term as a result (Wachs, 1995). In the future, it may be possible to derive a learning, behaviour, or vulnerability index from age-group scores using such variables to determine outcomes for hungry children of the NLSCY.

Children's weights and heights were reported by the PMK. From these, the body mass index was derived for children ten years of age and older. The resulting sample size was small so that findings are speculative. The longitudinal results demonstrated that a hungry girl child's weight is heavier in the face of persistent hunger, while for a hungry boy child, it is lower than reported for non-hungry children.

A hunger study of midwestern U.S. inner-city children compared anthropometric indicators for children who were classified as hungry with those classified as at risk for hunger, and those classified as non-hungry (Cutts, Pheley and Geppert, 1998). No differences were observed among these three groups for any standardized growth data including weight for age. The study recognized that the average weight for height of the population was higher than expected, and in line with heavier weights seen in low income populations (Centers for Disease Control and Prevention, 1995). The finding of weight discrepancies between girl and boy children exposed to persistent hunger bears further scrutiny.

5.4 Coping with Hunger and Food-Bank Use

There were few differences in responses to lack of food and coping strategies between 1994 and 1996. As seen in the past, parental deprivation was about six times more frequently reported than child deprivation. This has been well-documented elsewhere (Radimer, Olson, Greene, Campbell, and Habicht, 1992; Cristofar and Basiotis, 1992).

The 1996 results confirmed differences seen in 1994 between those who use food banks as a mechanism of coping with food insufficiency compared with those who seek help from relatives or friends. Food bank use seems to be a genuine marker of food deprivation, a strategy of last resort. While food bank use may not be a specific marker of food insufficiency (about two-thirds of the hungry in this study do not seek food bank support), it seems to be highly sensitive to the hunger state (i.e., few people who use a food bank are not truly hungry) [Tarasuk and Beaton, 1999a].

Seeking help from a food bank was significantly more likely among recipients of social assistance or welfare, lone-parent led families, and among families with a higher total number of siblings in the household. In a study of food bank users, non-users and past users in a low-income population of single mothers, the main differences between food bank users and non-users were larger family size, and severity of hunger (Smith and Hoerr, 1992). Residents of Ontario were significantly most likely to use a food bank in 1996, as they were in 1994, although this variable was not an independent predictor of food bank use in logistic regression analysis.

Food banks were initially established as an emergency response to a perceived hunger crisis. Food banks are now accepted as part of an institutionalized, albeit voluntary, network of food distribution (Campbell, 1991). It is important to emphasize that food banks have not been incorporated into public policy and are not a policy solution. The inadequacy of food banks as a source of quality food assistance has been illustrated by a recent study by Teron and Tarasuk (1999) who examined food bank recipients' hampers in Toronto in June and July 1998: food amounts were small; damaged or outdated goods were common; and food quality was poor.

In view of the limitations of food banks, concern must be raised about the growing trend of governments to "get out" of the business of helping people. Contemporary policy trends seem

destined to worsen social programs and encourage the growth of private voluntary efforts to relieve poverty. Our concern is twofold and is not, of course, with the generosity of the innumerable, well-intentioned people who indefatigably offer their services on behalf of those in need, but rather: (a) questions the ability of these private efforts to achieve the necessary standards that could be reached with properly funded, government-run programs, and (b) flags the general problem that charities may unintentionally relieve governments from providing effective social services that eradicate problems such as poverty and food insufficiency in the first place.

5.5 Hunger and Family Dysfunction

With two NLSCY cycles collected, we are now able to determine longitudinal effects of hunger on family function. Higher family dysfunction was found as a direct result of hunger, as well as a longer-term effect of hunger persisting over time. This would imply that the hunger state, either at one time, or persistently, leads to family stress. The result is greatest for families with girl children. Hamelin and colleagues (Hamelin, Habicht and Beaudry, 1999) studied the consequences of food insecurity in 98 low income households in Québec. They identified food insecurity as causing "a variety of sociofamilial perturbations …disrupted household dynamics as well as distorted means of food acquisition and management." These findings support our results related to family dysfunction as both a direct and longer-term consequence of hunger.

6. Conclusions and Policy Recommendations

Hunger is real and measurable among children in Canada. Direct measures of hunger are necessarily an extreme indicator of food insecurity. They are also indicative of more serious problems than broader measures of food insecurity such as poverty rates. Casting the net too widely undermines the credibility of those advocating for food as a basic human need, while measuring only hunger focuses the issue too narrowly for a broad social equity response.

1. We recommend that Canada implement a systematic measurement process for hunger and individual and household food insecurity, possibly through the Canadian Population Health Initiative.

Despite differences in Canadian and American hunger rates and situations, conclusions from U.S. hunger studies are similar to findings in this study (Nestle and Guttmacher, 1992). As in the United States, hunger results when very poor families have insufficient money to purchase food. Inadequate income is a function of low earnings and low social assistance benefits in comparison to the costs of non-food items. The obvious solution is to raise the minimum wage and social assistance rates.

2. We recommend that social assistance rates be raised to ensure that the fundamentally important basic human need for food be properly met within all family types across Canada.

3. We also recommend that the legislated minimum wage be raised to ensure that all families have access to sufficient food--a fundamental basic human need that cannot be ignored by responsible governments.

While we did not ask about barriers to employment, affordable, accessible child care is necessary if women, and in particular, lone mothers, are to be able to join the work force and reduce the time that they spend in poverty and dependency. In fact, a mother obtaining a full time job and achieving a consequent increase in income adequacy, was predictive of moving out of the hunger state.

4. We recommend that barriers to full time employment of particularly lone mothers be addressed, with special attention to affordable, accessible day care.

We noted that a precipitous decline in income associated with significant changes in family composition and employment status moved families from a non-hungry to a hungry state. The association of deteriorated health status in the primary caregiver in these families further highlights family stress during this transition.

5. We recommend that public sector personnel who work with families--be they health providers, teachers, social service personnel, clergy, or others--learn to recognize and assist families suffering from severe work dislocation resulting in precipitous income decline. Social program eligibility rules must recognize the precariousness of such families.

While representing only 22% of the hungry population in any given two year period, families who experience persistent hunger are remarkably stable in terms of family composition, employment status, and parental education. They likely represent the 'underclass' of individuals who do not cycle in and out of the labour market, but rather remain marginalized from mainstream economic activity. Despite socio-demographic stability, these families also experience the highest levels of family dysfunction of all hunger and non-hunger groups.

6. We recommend that a motivating, acceptable, participative, respectful, and evidence-based long-term strategy of welfare reform be implemented to assist families living in long-term poverty to gain self-sufficiency and an improved quality of life.

Use of food banks is a true marker of hunger. However, only a third of the hungry use their services. Hunger in families is alleviated by money to buy food, not by charitable sources of food from friends, or relatives, or from food banks.

7. We recommend that governments recognize the unsuitability of food banks as a public policy solution to hunger and commit to their elimination in favour of a condition of universal food security in Canada.

The poor health of children experiencing hunger is well-established in the literature and has been documented in this study. Hungry children were found to suffer from poorly controlled asthma that is possibly exacerbated by exposure to environmental tobacco smoke. The complex interplay between poverty and the ill-health of children, and amongst poverty, ill-health and smoking, must be addressed sensitively, comprehensively, and holistically.

8. We recommend that the National Children's Agenda and other complementary child health and social development initiatives prioritize the health of Canada's poorest children and their families in their action plans.

And finally, recognizing the unique richness of the NLSCY and the continued need for research into child hunger, child poverty, and appropriate social policy:

9. We recommend that the health, educational, and social outcomes of Canada's most disadvantaged children be regularly monitored and that research findings on these outcomes be utilized by policy makers to improve child well-being.

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